

What is claimed is;

1. An optical module comprising:

a substrate having formed at a surface thereof a first groove and a second groove both adopting a first structure and a groove at which a branching filter is disposed adopting a second structure and located between said first groove and said second groove both adopting said first structure;

an optical fiber having one end thereof set at said first groove adopting said first structure;

a light emitting element that emits light with a first wavelength;

a first lens element having a fitting portion with an external diameter substantially matching the external diameter of said optical fiber and set at said second groove adopting said first structure, which converts divergent light emitted from said light emitting element to substantially parallel light;

a second lens element having a fitting portion with an external diameter substantially matching the external diameter of said optical fiber and set at said first groove adopting said first structure, through which the substantially parallel light is converted to convergent light and the convergent light enters said optical fiber;

a wavelength branching filter set at said groove adopting said second structure at a position set within an optical path extending between said optical fiber and said light emitting element, which has a function of branching light with varying wavelengths; and

a light-receiving element at which light with a second wavelength emitted from said optical fiber enters via said wavelength branching filter.

2. An optical module according to claim 1, wherein:
the light entering said light-receiving element is a substantially parallel light beam.
3. An optical module according to claim 1, wherein:
said light-receiving element is constituted of a plane entry type light-receiving element.
4. An optical module according to claim 1, wherein:
said light-receiving element is directly disposed at said wavelength branching filter.
5. An optical module according to claim 1, wherein:
said lens elements are each constituted of quartz or silicon.
6. An optical module according to claim 1, wherein:
lens portions of said lens elements are each constituted of a diffractive optical element.
7. An optical module comprising:
a substrate having formed at a surface thereof a first groove and a second groove both adopting a first structure and a groove at which a branching filter is disposed, adopting a second structure and located between said first groove and said second groove both adopting said first structure;
an optical fiber having one end thereof set at said first groove adopting said first structure;
a light emitting element that emits light with a first

wavelength;

a lens element having a fitting portion with an external diameter substantially matching the external diameter of said optical fiber and set at said second groove adopting said first structure, through which divergent light emitted from said light emitting element is converted to convergent light and the convergent light enters said optical fiber;

a wavelength branching filter set at said groove adopting said second structure at a position set within an optical path extending between said optical fiber and said light emitting element, which has a function of branching light with varying wavelengths; and

a light-receiving element at which light with a second wavelength emitted from said optical fiber enters via said wavelength branching filter.

8. An optical module according to claim 7, wherein:
the light entering said light-receiving element is divergent light.
9. An optical module according to claim 7, wherein:
said light-receiving element is constituted of a plane entry type light-receiving element.
10. An optical module according to claim 7, wherein:
said light-receiving element is directly disposed at said wavelength branching filter.
11. An optical module according to claim 7, wherein:
said lens element is constituted of quartz or silicon.

12. An optical module according to claim 7, wherein:

a lens portion of said lens element is constituted of a diffractive optical element.

13. An optical module comprising:

a substrate having formed at a surface thereof a first groove and a second groove both adopting a first structure and a groove at which a branching filter is disposed adopting a second structure located between said first groove and said second groove both adopting said first structure;

an optical fiber having one end thereof set at said first groove adopting said first structure;

a light emitting element that emits light with a first wavelength;

a first lens element having a fitting portion with an external diameter substantially matching the external diameter of said optical fiber and set at said second groove adopting said first structure, through which divergent light emitted from said light emitting element is converted to substantially parallel light;

a second lens element having a fitting portion with an external diameter substantially matching the external diameter of said optical fiber and set at said first groove adopting said first structure, through which the parallel light is converted to convergent light and the convergent light enters said optical fiber;

a plurality of wavelength branching filters set at said groove adopting said second structure at positions set within an optical path extending between said optical fiber and said light

emitting element and having wavelength selectivity for wavelengths different from one another; and

light-receiving elements at which light having been emitted from said optical fiber and branched at said wavelength branching filters enters, each provided in correspondence to one of said wavelength branching filters.

14. An optical module according to claim 13, wherein:

the light entering said light-receiving elements is a substantially parallel light beam.

15. An optical module according to claim 13, wherein:

said light-receiving elements are each constituted of a plane entry type light-receiving element.

16. An optical module according to claim 13, wherein:

said light-receiving elements are directly disposed at said wavelength branching filters.

17. An optical module according to claim 13, wherein:

said lens elements are constituted of quartz or silicon.

18. An optical module according to claim 13, wherein:

lens portions of said lens elements are each constituted of a diffractive optical element.